

A critical review of the RSPCA commissioned report “Pedigree dog breeding in the UK: a major welfare concern?”

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1. Executive Summary

- 1.1 This document contains a response to the RSPCA report “Pedigree dog breeding in the UK: a major welfare concern?”
- 1.2 It is argued that the authors’ claims that this report is both independent and scientific are misleading, and that the conclusions reached appear to be significantly influenced by the views of the sponsor and the authors’ preconceptions (3.1, 3.2, 4.1, 4.2, 4.3, 6.1).
- 1.3 Analysis of the report content shows that there is direct conflict between statements identifying problems and calling for the need for urgent action (5.3, 5.6, 5.8, 5.14, 5.20, 5.38) and those that assess the current state of the evidence to support such calls (5.11, 5.14, 5.20, 5.25, 5.27, 5.31, 6.2).
- 1.4 A lack of consideration of environmental factors in determining canine behaviour is identified (5.10, 5.26.2, 5.26.2.2), together with concerns that research in this area has been misleadingly cited (5.10, 5.17, 5.18, 5.26.2.2).
- 1.5 In the case of Hip Dysplasia the evidence cited appears to have been misinterpreted (5.31, 5.32) and except in four cases there appears to be little evidence of a specific breed problem (5.26.1., 5.28, 5.29, 5.30).
- 1.6 Calls for restrictions on breeding practice (5.32, 5.39) are not balanced against conflicting calls for an increase in genetic diversity (5.21, 5.22).
- 1.7 While the report identifies the need for further research as the highest priority it fails to identify the requirement for reliable benchmarks at the levels of domestic compared with wild type, registered pedigree compared non registered pedigree, registered pedigree with cross-breed and interbreed variations (6.3).
- 1.8 It is concluded that, at our current state of knowledge, the broad based call for urgency made in the report is not only unsubstantiated but, if acted upon, risks generating significant adverse consequences (6.4, 6.5, 6.6). This is not to say that where quantitative evidence exists action should not be taken over a relatively short time-scale (6.7).

⁺ Author’s background is outlined in Annex 1

2. Background

- 2.1 In 2008, the RSPCA commissioned an independent scientific report on pedigree dog breeding in the UK.

Their stated aim was “*to help inform all those dedicated to protecting and improving the welfare of pedigree dogs*”.

The title of this report was framed in the form of a question:

“Pedigree dog breeding in the UK: a major welfare concern?”

The authors claim that this represents a report that is both scientific and independent. As an experienced scientist/engineer with over 25 year’s research experience I would suggest that the style and content of the report provide significant grounds to question both assertions.

In the critique in section 5 below, examples are presented section by section where the conclusions and recommendations of the RSPCA report do not appear to be well supported by the evidence presented.

3. Independence of the report.

- 3.1 There is always the possibility that “research” findings may be influenced by a researcher’s awareness of conclusions that a sponsor wishes to see supported. In the past this has been the cause of much debate regarding the desirability (or indeed ethical acceptability) of sponsorship of academic based research by both pharmaceutical and tobacco companies and the confidence that should be placed in the conclusions of such studies¹.

In this case the position of the RSPCA as sponsor of this work is made clear on their website:

“There is a wealth of scientific and other evidence to show that the welfare and quality of life of many pedigree dogs is seriously compromised as a result of established selective breeding practices”².

- 3.2 Although it is not explicitly stated that this position was adopted prior to receiving the report’s findings, a reference to the BBC documentary “Pedigree dogs exposed”, suggests that this was the case. If so, it follows that the adoption of a formal position in advance of commissioning a report could, at least subconsciously, influence the RSPCA’s choice of authors to target those whose previous work suggests they support the position taken i.e. “a safe pair of hands”.

Once chosen, awareness of the sponsor's prior position inevitably imposes a burden of expectation on the authors commissioned. For these reasons I do not believe that the report can safely be regarded as either independent or indeed impartial.

4. Scientific basis of the report

4.1 Scientific studies usually fall into one or both of two categories:

Curiosity driven research – the acquisition of data where there is limited previous information.

Hypothesis driven research – where, although available data may be limited or incomplete, it is possible to speculate on possible causal relationships (i.e. form hypotheses) which may be supported or discounted by additional data obtained for this purpose.

4.2 The title of the RSPCA commissioned report – “Pedigree dog breeding in the UK: a major welfare concern?” is framed as a question, this suggests that it proposes to test the hypothesis that:

Pedigree dog breeding practices in the UK compromise the welfare of pedigree dogs.

4.3 To do this effectively requires the results of previous studies be reviewed and collated dispassionately such that their results and conclusions can be discussed in an objective manner and overarching conclusions drawn with appropriate levels of confidence identified. For the reasons given below I do not believe the report adequately addresses this requirement.

5. Specific areas of concern

5.1 ***RSPCA report - Section 1 Purpose and scope***

It is worrying that having posed their title as a question the authors conclude the second paragraph of their introductory “Purpose and scope” section (page 2) with the unsupported assertion that “*the report reviews what is well-recognised to be an international problem*”.

5.2 The authors move on to state their goal to be proposing possible ways “*to improve the welfare of pedigree dogs*”. Having taken this apparent leap of faith before presenting their supporting evidence the authors then entitle the second section of their report:

5.3 ***RSPCA report - Section 2 The problem and its cause***

In the first paragraph of this section the authors' state:

"... there can be no doubt that numerous pedigree dogs of many different breeds now experience compromised welfare due to the direct and indirect effects of selective breeding practices (sections 3 and 4). Many breeds have high rates of heritable disorders or disease, and some have physical conformations which can result in disability, behavioural problems or pain, and thereby unnecessary suffering."

No references are cited in support of this opinion. In the second paragraph the phrase "*anatomically deformed*" is used without any attempt at defining what is meant and what the authors would regard as a reference norm.

5.4 It is also stated:

"However, there is also considerable evidence that cross breed dogs have lower veterinary bills (Data From Churchill Insurance company cited in K9 Magazine 2007). This suggests that they are less often ill and less likely to suffer compromised welfare as a consequence."

Although acknowledged later in the report (page 24 "*Insurance databases usually lack detail and show a bias towards pedigree animals*"), no qualifying comments are made at this point with regard to the possibility of distorting effects arising from different levels of insurance cover for cross breeds compared with pedigree dogs.

5.5 The authors suggest:

"Limited record keeping, lack of transparency in the breeding and showing world and the absence of sufficient research means that the full extent of the problem is difficult to assess"

This is a surprising statement to make in light of the earlier reference to cross breeds where there is no systematic breeder record keeping and considerably less targeted research than has been conducted with pedigree dogs. Indeed the greater genetic diversity of cross breeds the authors highlight as being beneficial means that it is inevitable that such studies, were they to be conducted, would be far more difficult to interpret in a rigorous manner.

5.6 This section finishes with the paragraph:

"Breeding practices and efforts by breed societies and kennel clubs, to date, have been ineffective at protecting the welfare of many breeds of domestic dog. Therefore to safeguard the future of pedigree dogs, changes in breeding and

selection practices are urgently required, and for some breeds more drastic measures will be needed. All members of society, and in particular all those who benefit from pedigree dogs, have a moral and ethical obligation to ensure that every action is taken to attempt to overcome the current problems and to increase the health and welfare of future generations of pedigree dogs.”

This represents a series of opinions and moral views expressed as facts. Again no external studies are cited to support these views (In fact at a later point in the report the Authors cite 5 year rolling mean results that suggest screening schemes aided at reducing hip dysplasia are having a beneficial effect – RSPCA report section 4.71). The language used is emotive and the word “urgently” is used without explanation or justification in terms of the timeframe over which genetic modifications can be achieved in the canine population.

5.7 RSPCA report - Section 2.2 Why this is an important problem

The first paragraph of this section cites the Companion Animal Welfare Council (CAWC) report published in 2006³. It is instructive to compare the contents pages of the two reports side by side (Table 1). The CACW report clearly seeks to put the subject material in its broader context. Sections giving historical background and explaining the methodology used precede sections explaining how problems arise and the scale of the problem that results. In contrast the RSPCA report concentrates purely on perceptions of problems with no prior explanation of the methodology used to establish these.

RSPCA	CACW
1. Purpose and scope 2. The problem and its causes 3. Welfare Issue 1 –exaggerated anatomical features that reduce quality of life 4. Welfare Issue 2 – increased prevalence of inherited disorders. 5. Possible ways forward	1. Introduction and aims 2. The history of selective breeding in companion animals 3. Past and present methods used for selection/genetic modification 4. Methods of assessment of welfare impact relevant to this Inquiry 5. The impact of selection/genetic modification on physical health, behaviour and welfare 6. The scale of the problem 7. Methods and potential to improve welfare by selection/ genetic modification 8. What needs to be done?

Table 1 comparison of major section headings for RSPCA 2008 and CACW 2006 reports

- 5.8 This section continues with a series of emotive statements which might be expected to inflame rather than inform opinion:

“Selective breeding of pedigree dogs by people has contributed to the problem (sections 3 and 4) and so we have a moral obligation to solve it.”

“Most dog breeding is a hobby, conducted by “dog lovers” rather than a truly utilitarian activity. As such, the moral obligation to maximise the dogs’ quality of life, and address known and avoidable risks to their health and welfare, has to be of utmost priority.”

“Greater understanding of the level of awareness in dogs and other animals has necessitated an ethical environment in which humans respect and live in harmony with other members of the animal kingdom. Deliberately breeding animals with a high propensity to suffer can in no way be regarded as either respectful or harmonious.”

Again these statements appear prior to the majority of the evidence cited to support them. Open ended phrases like *“utmost priority”* have little place in a report of this type which seeks to inform a broad range of stakeholders – do the authors really intend to suggest that the problems they perceive have higher priority than most of the other issues facing modern society? The phrase *“respectful or harmonious”* has no place in a report that purports to be scientific. What does this mean? Respectful to what? Harmonious with what?

- 5.9 *RSPCA report -Section 2.3 Selective breeding for physical appearance – the cause of the problem*

Still there is no systematic effort to define *“the problem”*. Of the nine references cited in this section only two refer to welfare issues and their conclusions are not specifically described or clearly linked to the authors’ own views. The authors’ linkage of the phrases *“morphological extremes”* and *“anatomical abnormality”* requires further explanation. For example, there are many examples in nature where extreme secondary sexual characteristics can be seen as compromising some aspects of survival fitness but can these be scientifically described as abnormal⁴?

References are made to founder effects and adverse consequences of limited genetic diversity but no attempt is made to put this in the context of the level of genetic diversity that would be expected in wild packs dogs, wolves or dingoes.

5.10 ***RSPCA report -Section 3 Welfare issue 1 – exaggerated anatomical features that reduce quality of life***

In their introductory paragraph the authors' state

“In some breeds, selection for the original function has led to a temperament unsuited to the current home environment, and this means that dogs may be predisposed to developing behavioural problems when kept as family pets.”

Again this represents unsupported opinion; no specific aspects of temperament are identified as “*unsuitable*” and no breeds are identified. Of greater concern is the fact that no acknowledgement is made that behaviour is significantly influenced by environmental factors and degree of socialisation. The current popularity of television programmes on problem dogs (e.g. It's Me or The Dog, Dog Borstal, The Dog Whisperer) depict a situation regularly seen by all involved in dog training classes i.e. that the common factor in many canine behaviour problems arises from the actions of the owner rather than the breed (or cross breed) of the dog concerned. In their 2004 case review⁵, the UK Association of Pet Behaviour Counsellors report that 68.6% of dogs that had bitten were considered to have been inadequately exposed to appropriate stimuli by the owners during puppyhood. However, no attempt is made by the authors of the RSPCA report to rank the relative contribution of genetic and environmental factors.

5.11 The following sentence is the key to the whole report and should be highlighted in the preliminary introduction not hidden in “*background information*”

“There is currently no widely applicable empirical basis on which to decide which breeds are most affected by a particular problem, nor to rule out other breeds as unaffected”.

It is hard to dispute this statement but also it is hard to reconcile it with the concluding paragraph of section 2.1 as cited earlier:

“Breeding practices and efforts by breed societies and kennel clubs, to date, have been ineffective at protecting the welfare of many breeds of domestic dog. Therefore to safeguard the future of pedigree dogs, changes in breeding and selection practices are urgently required, and for some breeds more drastic measures will be needed.”

If the assessment tools are not available how can the authors suggest approaches for the direction of breeding practices?

5.12 The statement which follows is simply unwarranted:

“Therefore within this section, most breeds are not named. However, where breeds are not named, there are many likely examples of every complaint mentioned.”

It would be more reasoned to say that as there is no widely applicable empirical basis on which to decide which breeds are most affected by a particular problem we are not yet in a position to accurately identify affected breeds.

5.13 *RSPCA report - Section 3.2 Examples of exaggerated anatomical features*

The authors cite the following references to areas of exaggerated anatomical features identified in the Multilateral Consultation of Parties to the European Convention for the Protection of Pet Animals. (Council of Europe 1995)⁶:

- *overly large or heavy dogs that may suffer from joint problems;*
- *dogs with very short legs that may have limited locomotion, and be predisposed to disorders of the vertebrae column;*
- *short skulls and flat faces ie (brachycephalic breeds) that may lead to breathing disorders and blockage of the lachrymal (tear) duct;*
- *large flat skulls that may result in birth difficulties;*
- *abnormal positions of limbs, e.g. bowed or ‘too steep’ that may result in difficulties of movement and joint degeneration;*
- *abnormal positioning of the teeth that may result in difficulties in feeding and caring for young;*
- *abnormal size and position of the eyes or eyelids that may lead to irritation, inflammation, degeneration and prolapse of the eyes;*
- *very long ears that can easily be injured;*
- *markedly folded or furrowed skins that may cause eczema or skin complaints, eye irritation or inflammation;*
- *hairlessness that may result in an inability to thermoregulate.*

This would seem to provide a rational starting framework for attempting to address welfare concerns. As the authors are prepared to speculate widely throughout their report it is hard to understand why they have made no attempt to

suggest illustrative breed examples for each these categories to provide some direction for the future studies recommended later.

5.14 *RSPCA report- Section 3.3 Evidence that exaggerated anatomical features can cause suffering*

This section starts with a key sentence:

“There is remarkably little explicit recognition of the welfare issues that may be associated with the extreme morphologies selected for in some registered breeds, and few peer-reviewed papers documenting their effects.”

This raises a fundamental question, does this situation represent a lack of research effort or lack of evidence for such research to identify. The authors appear not to consider the second possibility. The remainder of this section catalogues a range of conditions attributed to exaggerated anatomical features, but there is little in the way of specific quantitative data on incidence or prevalence within the breed groupings referred to. Again the section concludes with an emotively worded paragraph which is hard to justify from the qualitative nature of the evidence on which it is based:

“Overall, the list of disorders likely to cause suffering due to extremes of morphology and cosmetic characteristics in modern dog breeds is alarming. That treatments and procedures have been developed explicitly to counteract these exaggerated features is in itself evidence that the problems are of sufficient welfare concern to need veterinary and/or surgical intervention. This situation calls for urgent ethical review and attention to breed standards and showing, breeding and veterinary practices”.

5.15 Clearly the development of any new veterinary procedure will be stimulated by demand, but this could arise from a relatively low incidence across a large population not just a high incidence in a small population. Also environmental differences and activity levels between breeds might be expected to influence the frequency of some conditions, e.g. cruciate ligament damage resulting from exercise based injuries.

5.16 *RSPCA report - Section 3.4 Effects of exaggerated anatomical features on behaviour*

This is a very difficult area to assess as behaviour will be strongly influenced by environmental factors not just genetic effects. The authors do not appear to consider the balance of “nature v. nurture”. Paragraph 1 considers the effect of a number of anatomical features of different breeds on “natural” behaviour without attempting to define the range of what constitutes natural behaviour. This is followed by the sentence *“This likely diminishes their quality of life”* which

appears to be pure supposition and certainly requires further validation if claimed to be a scientific observation.

The authors refer to a paper by Duffy et al 2008⁷ saying *“In addition, some breeds are so small that they are likely to suffer frequent fear and show correspondingly high levels of fearful and defensive behaviours”* this is not a quote taken from the paper: in fact Duffy et al state:

“The present findings should be interpreted with caution. The substantial within-breed variation in C-BARQ scores observed in this study suggests that it is inappropriate to make predictions about a given dog’s propensity for aggressive behavior based solely on its breed. Furthermore, questionnaire reports inevitably involve a degree of subjectivity, and it is possible that respondents’ answers were influenced by both popular breed stereotypes and/or perceptions of which answers would be deemed socially acceptable.”

Reference is also made to the work of Svartberg⁸ to suggest that show dogs are more fearful than and less playful than working dogs and that this may cause problems and needs further investigation. What they do not say is that he also found that

“ ... selection for Working dog use is positively correlated with playfulness and aggressiveness.”

- 5.17 The suggestion that fearful and defensive behaviours are inversely proportional to body size across a range of breeds is not explicitly made by Duffy et al⁷ who only cite evidence for a possible link in two cases (Dachshund and Chihuahua). They also state:

“Differences between lines of distinct breeding stock indicate that the propensity toward aggressive behavior is at least partially rooted in genetics, although substantial within-breed variation suggests that other factors (developmental, environmental) play a major part in determining whether aggressive behavior is expressed in the phenotype”

- 5.18 The significance of play to welfare is discussed, but not considered rigorously with differences between play levels of adults and juveniles not considered. The work of Jensen et al (1998)⁹ cited as supporting the importance of play to welfare is not only based on a study conducted with a prey rather than predator species, it is conducted with juveniles not adults. This should have been made clear in the text. Play signalling may be critical to the initiation and continuation of dog play, but how significant is play as a factor in adult behaviour? Personal observation of my own dogs living in groups of >=5 over the last 20 years suggests that play based interactions between adults occurs only infrequently. If representative of broader canine behaviour, this questions the authors’ supposition

that if play signals are compromised by anatomical features this “... *may have important welfare consequences*”.

5.19 On page 16 the authors consider the effects of juvenile traits:

“Other breeds selected to retain juvenile anatomical features also retain juvenile behaviour patterns (Goodwin et al 1997) making them particularly dependent upon their human carers and vulnerable to distress when left alone (McGreevy and Nicholas 1999)”.

The effectiveness of play based training regimes suggests that all breeds of dogs retain some juvenile characteristics. These are reinforced in the domestic environment by the owner offering/providing food throughout the dog’s life, a role which mimics that of the dam but no other adult member of the pack. The extent to which this varies from breed to breed is likely to correlate with environment and owner profile, again this possibility is not considered.

5.20 *RSPCA report - Section 3.5 Unresolved Issues*

The authors again make a number of speculative points which are unsupported and not placed in a broader context. This results in a marked internal inconsistency and provides no assessment of the data available to aid decisions i.e.

“.... The problem is that little empirical data currently exists to allow objective comparison of their relative severity or decide what level of modification is acceptable and what is unacceptable.”

Is followed by the statement:

“Given the evidence of current suffering (section 3.3) radical decisions cannot wait and so subjective assessments of relative welfare impact must be employed in the interim.”

It is worth reiterating here that the authors start section 3.3, considering evidence of suffering, with the statement:

“There is remarkably little explicit recognition of the welfare issues that may be associated with the extreme morphologies selected for in some registered breeds, and few peer-reviewed papers documenting their effects.”

5.21 ***RSPCA report - Section 4 Welfare issue 2 – increased prevalence of inherited disorders***

RSPCA report Section 4.1 Background information

The main concerns here are qualitative references to “*reduced genetic diversity*”, “*genetic diversity is rather low*”, and “*low genetic diversity in some parts of the genome*”. As is the case throughout the report there is no attempt to quantitatively define reductions in genetic diversity with reference to the wild population of related species e.g. wild dogs, wolves or dingoes. Clearly any applied selection pressure (resulting from both natural and breeder imposed pressures) will tend to reduce genetic diversity this must be set against the rate of natural mutations which will tend to increase diversity. While the rate of drift may well be higher for breeder imposed rather than natural processes it would be helpful to have some assessment of the magnitude of any differences and the timescale over which their effects will be observed.

5.22 *RSPCA report - Section 4.2 The link between inbreeding and disease*

This section starts with a discussion of inbreeding coefficients, but again there is no reference to the specific values seen in pedigree dog breeds and no attempt to compare inbreeding coefficients with those seen in wild type populations of related species. As this is one area where a direct quantitative evaluation is clearly possible this omission is disturbing.

It is surprising that there is no mention here of the restricting effects of UK legislation designed to protect against rabies. Historically the requirement for a six month quarantine period severely restricted the import of new bloodlines and in part contributed to lack of genetic diversity the authors consider. With the introduction of the pet passport scheme this barrier has been considerably reduced and in the case of my own breed (Rottweiler) has led to a considerable increase both in the number of imported animals and the use of overseas sires. This has inevitable resulted in a broadening of the genetic base which has probably been replicated across a range of breeds. These effects should have been considered in this section.

5.23 *RSPCA report - Section 4.3 Examples of diseases*

This section catalogues a range of conditions where there is evidence for a genetic link to disease such that incidence correlates with genetic diversity. That this occurs is well established but again the effects are not put in a broader context. In the human population there are a number of conditions that vary in their levels of incidence between different ethnic groups; in some cases this can be maintained by an associated benefit e.g. carriers of the genetic defect that leads to sickle cell anaemia derive some protection from malaria¹⁰.

5.24 Clearly where high levels of disease can be shown to result from a specific recent mutation, stringent efforts should be made to remove the mutated gene by directed breeding and there are programmes aimed at achieving this (RSPCA report section 4.7). However, for conditions which have been recognised for extended periods across a number of breeds, or their wild progenitors, the situation could well be complex and such a simplistic approach may lead to associated undesirable consequences.

5.25 *RSPCA report - Section 4.4 Limitations of current prevalence data*

This section starts with a review of the limitations of current data and studies which is summarised with the following statement:

“In conclusion, the true prevalence and incidence of many disorders in pedigree remains unknown”

To address this problem the authors suggest:

“To fully monitor progress, accurate and reliable recording methods and systems need to be developed in collaboration with epidemiologists (see section 5). Only when these are in place will we be able to fully ascertain which breed predispositions are due to heritable factors that can be influenced by breeding, and which are affected by common environmental factors associated with the breed (such as the way individuals are likely to be kept and managed, and the type of person who owns them).”

It is difficult to see how this can be used as a justification for urgency in any area other than the instigation of appropriate studies. To suggest that immediate and widespread changes to breeding practices are needed is not justified by these conclusions.

5.26 *RSPCA report - Section 4.5 Lack of attention to health welfare and behaviour*

This section focuses mainly on heritability related to two areas hip & elbow dysplasia and temperament. This is somewhat surprising for different reasons in each case.

5.26.1 Hip and elbow dysplasia

While scoring schemes for elbows are relatively recent, the KC/BVA hip dysplasia scheme has been running since 1984 and the majority of breeds recognised by the UK Kennel club have submitted sufficient dogs for scoring to be given a breed average. Figure 1 shows a scatter plot of hip scores as a function of mean weight for 108 breeds (breed averages 2008)¹¹.

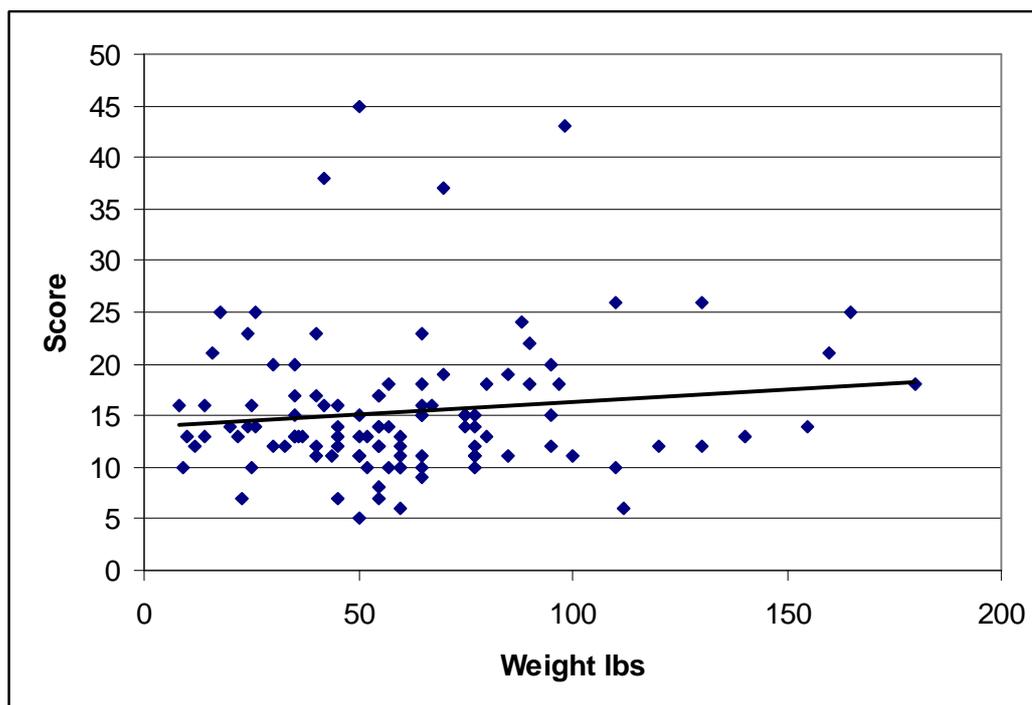


Figure 1 Scatter plot of breed mean hip-score against quoted breed mean weights⁹ (corrected for weight differences between sexes)

The average over all breeds is 15.4 the standard deviation is 6.8. Therefore only 4 breeds have an average higher than 2 standard deviations above the mean i.e. 29. This does not provide a sound basis for suggesting that HD is a specific consequence of loss of genetic diversity in anything other than a small minority of breeds. It is interesting to note that there is only a weak correlation with size (as shown by the trend line), and that all but one of the recognised giant breeds have scores with 1 SD of the mean. It would be instructive to know, but almost impossible to determine, the equivalent scores for wolves in the wild.

5.26.2 Temperament

The authors make an unsubstantiated comment regarding the “likely” effects of breeding choices on temperament:

*“Similarly when breeding choices are based mainly on physical appearance, many breeders have **likely** paid insufficient attention to temperament or capacity to cope in a domestic environment. This may account, at least in part for the large numbers of behavioural problems that are encountered in dogs today. Pet behavioural counsellors regularly encounter specific behaviour problems that seem to be over-represented in specific breeds, and some of these have been investigated.”* (the bold is mine)

Again no consideration is given to the contribution of environmental effects on behaviour. Mugford¹² has found that show dogs have much lower referral rates to his behavioural practice than dogs from a non show background. If the authors' thesis that poor breeding practice compromises behaviour it is to be expected that the reverse would be the case.

5.26.2.1 It is interesting to contrast the experience of Mugford¹² as a practicing animal behaviourist with the academic views of McGreevy whose work is widely cited throughout this report. In an opinion piece in New Scientist (cited by the authors) McGreevy states¹³:

“Yet the selection process in the show ring barely reflects temperament – the only behaviour test the show dog has to pass is not biting the judge”

Consider the specifics of what showing a dog entails and the naivety of this statement becomes apparent. A show dog will be transported in a vehicle to the show; here it will encounter many other dogs and their owners in what is often a confined and noisy environment. While judged it will be expected to move under control in close proximity to others. It will have to undergo an intimate hands on examination including a detailed assessment of its dentition and, in the case of males, a physical check to confirm the presence of two normally descended testes. Throughout this process not only is it required *not to bite the judge* but to be successful it will have to demonstrate confident self assured body language.

To achieve a dog capable of coping with these requirements consideration of behaviour inevitably has to be a central factor in breeding choices. This determines the innate traits of puppies which go into both show and pet homes.

5.26.2.2 Apart from this clear example of a gap between theorists and practitioners the authors have provided little in the form of tangible evidence to support their concluding statement:

“Breeding to show standards may have adverse affects on behavioural traits in some instances”

In fact this statement contradict the conclusions of Duffy et al⁷ it al who the authors cite earlier:

“... The opposite pattern was observed for owner-directed aggression among Labrador Retrievers, ($z = 2.18, P < 0.05$) indicating that higher levels of aggression are not attributable to breeding for show per se.”

5.27 *RSPCA report - Section 4.6 Access to knowledge of inherited diseases for breeders and owners*

The authors consider the reliability of lists of disease and disorders to which certain breeds are predisposed. It is hard to see how they justify their earlier assertions and lack of consideration of environmental factors given their statement below:

“A problem with these lists is that they are not fully comparable for the following reasons:

- Many published lists of breed-specific predispositions do not state what objective criteria of increased prevalence they use for categorising a cut-off point for a breed-specific predisposition and this makes consistency and comparison difficult.*
- They are often based primarily on veterinary surgeons reports and textbooks and not on systematically collected data. In fact, many lists appear to be compiled from case reports, so that where a disease is rare but general in the dog population it becomes attributed to the breed in which it was first noticed.*
- Often there is no proof that the disease is inherited, so it may be that environmental conditions or infections to which a breed is exposed through owner behaviour or work cause the high prevalence, rather than any genetic predisposition One of the old established examples of this is Coonhound paralysis which causes motor nerve inflammatory disease in the breed. This has been shown to be a response to raccoon bites rather than an inherited breed predisposition, and may well be an infectious or allergic response*
- The Inherited Diseases in Dogs web site (IDID; section 4.3) attempts to list cases of genuine inheritance or predisposition, but even here the quality of data available is variable. It lists breed predispositions to diseases in 240 breeds. Conditions are limited to those that have appeared in peer-reviewed publications, but it is an international compilation so figures compiled overseas are not necessarily equally valid in the UK.”*

5.28 *RSPCA report - 4.71 Tests based on detection of phenotype (using the current BVA/KC hip dysplasia scheme as an example)*

This is the first example considered by the authors where there is considerable data obtained over an extended period (>25 years). The authors provide a background to the condition but do not clearly explain the relationship between the anatomical features assessed (hip dysplasia -HD) and the disease condition that CAN result (osteoarthritis). This distinction is important as there is a misconception that HD is a condition that predominantly affects larger breeds (this appears to be held by the UK KC as well as the Authors). Examination of figure 2 suggests that the underlying joint malformation identified by radiological examination is seen across the complete size range of pedigree dogs submitted for scoring. While there is a weak trend of increasing score with increasing weight this is largely removed if those breeds whose score is 2 standard deviation values above the mean for all breeds are removed.

5.29 The data suggests that, with the exception of 4 breeds where there may well be a specific problem; there is little statistical evidence to distinguish between individual breeds on the basis of mean hip scores. At various points in their report the authors comment on the benefits of “hybrid vigour” and suggest outcross across existing breed boundaries as a means of improving the health of pedigree dogs. The results of the KC/BVA scheme at 01/11/2008⁹ provide some interesting data in this respect. Although not a KC recognised breed, 262 Labradoodles, a Labrador/Poodle cross, were scored. As these breeds are not closely related in pedigree terms first generation Labradoodles represent an example of an F1 hybrid and yet their breed mean average hip score of 14 is insignificantly different from the values of their parent breeds (Labrador 15, Standard Poodle 14).

5.30 This suggests a more extensive consideration of the health implications of HD is required before detailed breeding restrictions are imposed. If we start with the reasonable assumptions that the potential for hip wear leading to osteoarthritis is a function of both the degree of joint abnormality (HD) and the stresses placed on the joint it becomes clear why there is a perception that this is a condition that affects larger dogs. In terms of simple geometry the volume of a dog (hence mass at constant density) is defined in terms of length to the power 3 (e.g. cubic metres), area (as in joint surface area) is defined in terms of length to the power 2 (e.g. square metres). The stress on the joint will be a function of the mass of the dog divided by the joint area; this can be defined in terms of length i.e. the stresses on a dog's joint will increase with the cube root of the dog's volume (mass). This explains why clinical problems resulting from HD are more commonly seen in larger breeds, but it also suggests that lower hip scores are more important in larger breeds if clinical problems of osteoarthritis are to be avoided. This in turn suggests that a “one size fits all” hip score target is inappropriate across a range of breeds.

5.31 The authors state:

“The inescapable conclusion is that the current scheme does not provide representative data for many UK dog breeds, so at the moment we simply do not know the true prevalence of the disease in many UK dog breeds, or whether there is any progress in reducing it.”

I would suggest that this statement is simply incorrect: as differences in approach to the scoring scheme would average out across all breeds the narrow distribution of BMS values shows we have a very accurate assessment of HD levels BUT not the levels of osteoarthritis that may result and how these vary with breed size and activity levels.

5.32 The authors are dismissive of 5 year rolling mean data (their table 1) which shows BMS values for the most commonly scored dogs progressively falling over the last five years and propose that only animals with a score lower than their BMS be used for breeding. This would be a serious mistake with disastrous implications for the genetic diversity the authors propose as vital at other points in their report. The numerical nature of the scoring scheme can distort the BMS value where there are a number of individuals with very high scores. For this reason the breed median is a better indicator of the true situation than the breed mean value. The compiled data for the BVA/KC scheme in 2006 reports these values¹⁴ (sadly 2008 does not). Taking the example of the breed with the highest number of scored individuals (Labrador – 50,139), the breed mean average is 15 but the median value is 10. This means that there are as many individuals with a score below 10 as there are with scores above. If this were to be set as the benchmark for breeding the gene pool would be reduced by 50% without any consideration of the effects this would have on other aspect of conformation, physiology, temperament or other health issues. A more rational strategy will be needed if HD is to be reduced without compromising the levels of other genetically related conditions.

5.33 *RSPCA report - Section 4.7.2 DNA based tests*

These offer an extremely valuable new tool for dealing with single gene mutations with severe health implications and it can be established that there are no conflicting health benefits. A potential danger arises if, as costs fall, such tests become used to aid the selection of cosmetic features.

5.34 *RSPCA report - Section 4.7.3 Kennel Club Accredited Breeder Scheme as an example of the difficulties of designing health and disease screening programmes*

This title is misleading and the suggestion that the “scheme is very popular” is questionable. In fact the scheme was brought out with only narrow and limited prior consultation and was met with considerable resistance from the more responsible pedigree dog owners and the dog press. This stemmed from the

“lack of teeth” identified by the authors here. Many tests were only recommended and not required. In the case of the Rottweiler, despite breeders submitting the fourth highest number of dogs for scoring under the KC/BVA hip dysplasia scheme, hip scoring was not a requirement when the Accredited Breeder scheme was originally launched and was only introduced in response to pressure applied by breed clubs.

5.35 Where tests are required no limits are placed on the allowable scores for breeding, although to be fair even with HD schemes we are not in a position to objectively set individual breed targets (this report - section 5.30). Furthermore examination of the small print suggests the word “Accredited” is inappropriate as the Kennel club offers no redress to purchasers of a defective puppy from a scheme member and the only sanction against a scheme member in breach of the scheme’s terms is expulsion from the scheme.

5.36 Therefore it is more accurate to describe the accredited breeder scheme as providing an illustration of lack of benefits that might be expected from poorly thought out welfare initiatives. This scheme should not be taken as providing evidence that well thought out protocols implemented by responsible breeders cannot be effective.

Given that the UK Kennel club cannot be regarded as evenly remotely democratic it would be a serious mistake to assume the shortcomings of this scheme arise from attempts to reflect the wishes of the majority of dog breeders in the UK!

5.37 ***RSPCA report - Section 5 Possible ways forward***

Section 5.1 Where are we now?

This section starts with a factually erroneous statement:

“In the UK, the dog breeding and showing industry is essentially self regulating”

In fact the situation is far worse than this. Control is in the hands of a small self regulating closed membership club whose actions are not accountable to the majority of their stakeholders in any democratically meaningful way. There will inevitably be more resistance to policies imposed by dictate than those resulting from a consensus reached by elected representatives. Unless the management of the KC changes this resistance is likely to continue to impede the uptake rate of welfare initiatives

5.38 The authors reiterate:

“... a strong case can be made that there are many breeds whose anatomies raise serious welfare concerns”

This may be true, but such a case has not been effectively made in the authors' report: at many points they acknowledge that there is insufficient data to allow firm conclusions to be made. This provides no rational basis for the suggestion of a need for urgency in anything other than the sponsoring of appropriate quantitative research.

5.39 *RSPCA report - Section 5.2 What could be done? - a vision for the future*

The first two bullet points in this section represent unfocussed aspirations described as “*generic aims*” for future initiatives:

“only breed dogs whose anatomy, temperament, and genetic predisposition for disease or disorder, make them likely to produce offspring which will experience a high quality life free from pain and suffering.”

“only breed sufficient dogs to meet current demand such that each puppy can be homed in suitable caring environment”

5.40 Despite the authors' implication that the majority of show breeders are unconcerned by aspects of welfare, they provide no evidence to support this view other than references to specific problems affecting a limited number of breeds in each case. At no point does the report recognise that there is a difference in motivation between those who breed to show and those who breed purely for profit. The authors may take a view that both reasons are reprehensible but should acknowledge that most existing health schemes result from input and support from show breeders not those whose primary goal is to derive income. While it may be possible to implement legislation to control the registration of pedigree dogs it is hard to see how this could be applied to cross breeds and, notwithstanding the benefits the authors claim for hybrids, the problem of regulating supply and demand would still remain

5.41 The second point reinforces this view, show breeders still produce a minority of all dogs registered by the Kennel Club but in many breeds the majority of dogs that find their way in rescue organisations are not directly produced by show breeders.

5.42 Points b

(culture shifts such that dogs that are perceived as the most desirable are those which are fit, healthy, are well suited to the lifestyle they lead and have a high quality of life)

and d

(breeders only breed dogs that are well suited to the lifestyle they will lead and refrain from breeding those that are likely to experience unnecessary suffering)

of the list of objectives need to be considered in further detail. Both refer to the need for dogs to be “*well suited to the lifestyle they (will) lead*”. Accepting that in some cases morphological exaggerations have been excessive, it must still be recognised that selective breeding has been effective in producing animals which meet a number of human needs including that of “companionship”. It is obvious that the size and exercise requirements of most of the domesticated dog’s forbears would render them unsuitable for elderly and infirm owners who typically chose small breeds with lower exercise requirements. How do the authors proposed to balance the human rights of these groups against their concerns regarding temperament problems in small breeds which are based on very limited data?

5.43 *RSPCA report - 5.3 Prioritised actions – a survey of experts*

The main concern here is the definition of experts. The authors of this report present themselves as experts, a view presumably shared by at least some in the organisation that sponsored their research. Based on my analysis of their report I would suggest that, in some of the areas covered, their level of expertise is questionable for the reasons given above, and that there is evidence to suggest that that their conclusions are excessively distorted by their subjective personal opinions. It is essential that in an area as complex as this which involves genetics, physiology, behaviour, ethics welfare and human sociology that a wide range of experts be involved and that these need to be rigorously honest in dissociating their own ethical preconceptions from the data collection and analysis process.

5.44 *5.4.1 Priority Recommendations*

In the main the recommendations seem reasonable and their degree of feasibility appears to correlate with the level of support given by the range of “experts” questioned. It is entirely right that the first priority listed is the need for more research. The key is that this research must be rigorous, high quality and the experimental design should not be compromised by the subjective preconceptions of the researchers concerned.

6. **Conclusions**

- 6.1 While I appreciate that the report does not form the basis of a manuscript intended for peer review, its claim to be scientific, coupled with the intended outcomes and stated goal impose a **MORAL** obligation on the authors to apply the same editorial discipline as they would for a report intended for a peer reviewed journal. This clearly has not occurred and I seriously doubt that the content of the introductory section would satisfy the editorial requirements of any respected scientific journal. Similarly, in my field at least, there would be an expectation that the conclusions drawn should reflect the reliability of the data presented more closely than occurs here.

- 6.2 There is clearly evidence that health problems are not evenly distributed across the range of pedigree dogs currently recognised by the UK KC. This is hardly surprising as conditions affecting human health vary between ethnic groups. Sadly this report does not present quantitative data that would allow reliable identification of affected breeds where problem levels exceed a scientifically determined threshold.
- 6.3 While I share the authors' subjective view that there are some breeds where remedial action is necessary I do not believe that the use of emotive language provides an effective alternative to quantitative analysis. There are some fundamental questions that need to be addressed:
- i Taken collectively, are pedigree dogs less healthy than their closest living non domesticated relatives?
 - ii Taken collectively are cross breed dogs less healthy than their closest living relatives?
 - iii Taken collectively, are pedigree dogs less healthy than cross breeds?
 - iv On an individual basis how great is the health variation between individual breeds?
 - v How great are health variations across the cross breed population and how does this correlate with forbears and hybrid generation?
- 6.4 Once these overall assessments have been made the incidence and prevalence of identified conditions can be considered on a similar basis to prioritise any actions required for specific breeds.
- 6.5 With the exception of HD there is no data presented in this report that allows these questions to be answered. Even in the case of HD where data is available from a broad based survey run for over 25 years it is only possible to sensibly answer question iv.
- 6.6 The authors suggest that the evidence to support immediate action is morally compelling. If there were no potentially adverse welfare consequences of breeding restrictions then the moral argument would be justified even were the benefits to be small. Unfortunately in any complex system action taken to improve one aspect has the potential to compromise others. Done without care and a strong scientific basis, breeding restrictions will reduce genetic diversity. While this might change the relative levels of incidence of different conditions it would not necessarily improve overall health and welfare, and done badly could have a net negative effect.
- 6.7 Much as the authors might wish for urgent change a safer approach is to role out individual welfare programmes specifically as and when data is obtained to support their likely benefits.

6. References

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ANNEX 1 Dr John Hubble – Background Information

John Hubble is Reader in Biochemical Engineering at the University of Bath, having worked in higher education for the last 26 Years. He has authored over 60 peer reviewed publications in the areas of Biotechnology, Biochemical Engineering and Biomedical Engineering.

He has owned Rottweilers for 20 years, breeding 5 litters in that time. He has served on the committees and as Chairman of both a local canine society and a regional Rottweiler breed club. He has run puppy and pet dog training courses together with KC puppy foundation courses.